REMARKS

This application has been carefully reviewed in light of the Office Action dated May 12, 2009. Claims 1, 3, 7, 9, 13, 15 and 25 to 30 are pending in the application, of which Claims 1, 7, 13 and 25 to 27 are independent. Reconsideration and further examination are respectfully requested.

Claims 7, 9 and 26 were rejected under 35 U.S.C. § 101. Without conceding the correctness of the rejections, the claims have nonetheless been amended to confirm that, as those skilled in the art would have readily recognized and as described in the specification, the method is performed by a computer. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 1, 3, 7, 9, 13, 15 and 28 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,142,374 (Tajika) in view of U.S. Patent No. 5,406,392 (Aoki), and Claims 25 to 27 and 29 were rejected under 35 U.S.C. § 103(a) over Tajika in view of Aoki and further in view of U.S. Patent No. 6,328,404 (Fujimori). Reconsideration and withdrawal of the rejections are respectfully requested.

The image processing apparatus according to the present invention has "a first processing unit that executes the error diffusion process by changing at least one of a quantization threshold value and a quantization diffusion coefficient which are used for the error diffusion process on the basis of information on one of the density components to be processed" and "a second processing unit that executes the error diffusion process by setting, into fixed values, the quantization threshold value and the quantization diffusion coefficient which are used for the error diffusion process, wherein the error diffusion process by the second processing unit requires a lighter processing load than the error

diffusion process by the first processing unit". The first processing unit corresponds to a diffusion coefficient modulation type error diffusion method or threshold value modulation type error diffusion method, whereas the second processing unit corresponds to a diffusion coefficient fixed type error diffusion method or threshold value fixed type error diffusion method (specification page 5, lines 5-17). As discussed in the "Related Background Art" section of the specification, the modulation type error diffusion method increases the processing load.

The present invention therefore applies the modulation type error diffusion method (the first processing unit) and the fixed type error diffusion method (the second processing unit) in combination to the density components, instead of applying the modulation type error diffusion method to all the density components. In order to realize this, the invention adopts "an error diffusion processing control unit that controls to execute, by the first processing unit, the error diffusion process to a first density component among the plurality of density components, and by the second processing unit, the error diffusion process to a second density component among the plurality of density components, wherein the first and second density components have respective different component types and wherein one dot output based on the first density component has a lower density than one dot output based on the second density component".

Referring specifically to the claim language, Claim 1 is directed to an image processing apparatus for executing an error diffusion process to a plurality of density components, comprising a processor and a memory, a first processing unit that executes the error diffusion process by changing at least one of a quantization threshold value and a quantization diffusion coefficient which are used for the error diffusion process on the

basis of information on one of the density components to be processed, a second processing unit that executes the error diffusion process by setting, into fixed values, the quantization threshold value and the quantization diffusion coefficient which are used for the error diffusion process, wherein the error diffusion process by the second processing unit requires a lighter processing load than the error diffusion process by the first processing unit; and an error diffusion processing control unit that controls to execute, by the first processing unit, the error diffusion process to a first density component among the plurality of density components, and by the second processing unit, the error diffusion process to a second density component among the plurality of density components, wherein the first and second density components have respective different component types and wherein one dot output based on the first density component has a lower density than one dot output based on the second density component, and wherein the quantization diffusion coefficient is used to diffuse an error caused by a quantization process which is performed using the quantization threshold value to neighboring pixels.

Claims 7 and 13 are method and computer medium claims, respectively, that substantially correspond to Claim 1.

Along the same lines as Claim 1, Claim 25 is directed to an image processing apparatus for executing an error diffusion process to a plurality of density components, comprising a processor and a memory, a first processing unit that executes the error diffusion process by changing at least one of a quantization threshold value and a quantization diffusion coefficient which are used for the error diffusion process on the basis of information on one of the density components to be processed, a second processing unit that executes the error diffusion process by setting, into fixed values, the quantization

threshold value and the quantization diffusion coefficient which are used for the error diffusion process, wherein the error diffusion process by the second processing unit requires a lighter processing load than the error diffusion process by the first processing unit, and an error diffusion processing control unit that controls to execute, by the first processing unit, the error diffusion process to a first density component among the plurality of density components, and by the second processing unit, the error diffusion process to a second density component among the plurality of density components, wherein the first and second density components have respective different component types and wherein one droplet output based on the first density component has a smaller size than one droplet output based on the second density component, and wherein the quantization diffusion coefficient is used to diffuse an error caused by a quantization process which is performed using the quantization threshold value to neighboring pixels.

Claims 26 and 27 are method and computer medium claims, respectively, that substantially correspond to Claim 25.

The applied art, alone or in any permissible combination, is not seen to disclose or to suggest the first processing unit, the second processing unit, or the error diffusion control unit as claimed, and in particular, is not seen to disclose or to suggest at least the features of a first processing unit that executes the error diffusion process by changing at least one of a quantization threshold value and a quantization diffusion coefficient which are used for the error diffusion process on the basis of information on one of the density components to be processed, a second processing unit that executes the error diffusion process by setting, into fixed values, the quantization threshold value and the quantization diffusion coefficient which are used for the error diffusion process,

wherein the error diffusion process by the second processing unit requires a lighter processing load than the error diffusion process by the first processing unit; and an error diffusion processing control unit that controls to execute, by the first processing unit, the error diffusion process to a first density component among the plurality of density components, and by the second processing unit, the error diffusion process to a second density component among the plurality of density components, wherein the quantization diffusion coefficient is used to diffuse an error caused by a quantization process which is performed using the quantization threshold value to neighboring pixels.

Tajika discloses a printer that uses CMK light ink and CMYK dark ink (Fig. 1). Tajika teaches switching between dither matrix for CMK light ink and dither matrix for CMYK dark ink (Fig. 2). However, what is quantized in Tajika is dither, not error diffusion. Processing for dither does not diffuse an error to neighboring pixels. Moreover, Tajika fails to teach using the first processing unit and the second processing unit in combination.

Aoki discloses executing multiple (two) recordings on the same dot by means of CM light ink. Aoki uses one error distribution coefficient for the first recording and another error distribution coefficient for the second recording. Aoki teaches switching the error diffusion coefficient between the first recording and the second recording, but fails to teach executing switching between the first processing unit and the second processing unit as claimed. Therefore, the proposed combination of Tajika and Aoki is not seen to teach a first processing unit that executes the error diffusion process by changing at least one of a quantization threshold value and a quantization diffusion coefficient which are used for the error diffusion process on the basis of information on one of the density

components to be processed, a second processing unit that executes the error diffusion process by setting, into fixed values, the quantization threshold value and the quantization diffusion coefficient which are used for the error diffusion process, wherein the error diffusion process by the second processing unit requires a lighter processing load than the error diffusion process by the first processing unit; and an error diffusion processing control unit that controls to execute, by the first processing unit, the error diffusion process to a first density component among the plurality of density components, and by the second processing unit, the error diffusion process to a second density component among the plurality of density components, wherein the quantization diffusion coefficient is used to diffuse an error caused by a quantization process which is performed using the quantization threshold value to neighboring pixels.

Fujimori has been studied but it is not seen to teach anything that, when combined with Tajika and/or Aoki, would have resulted in the features of a first processing unit that executes the error diffusion process by changing at least one of a quantization threshold value and a quantization diffusion coefficient which are used for the error diffusion process on the basis of information on one of the density components to be processed, a second processing unit that executes the error diffusion process by setting, into fixed values, the quantization threshold value and the quantization diffusion coefficient which are used for the error diffusion process, wherein the error diffusion process by the second processing unit requires a lighter processing load than the error diffusion process by the first processing unit; and an error diffusion processing control unit that controls to execute, by the first processing unit, the error diffusion process to a first density component among the plurality of density components, and by the second processing unit, the error

diffusion process to a second density component among the plurality of density components, wherein the quantization diffusion coefficient is used to diffuse an error caused by a quantization process which is performed using the quantization threshold value to neighboring pixels.

In view of the forgoing, independent Claims 1, 7, 13 and 25 to 27, as well as the claims dependent therefrom, are believed to be allowable.

No other matters having been raised, the entire application is believe to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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